Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1-25 (canceled)

Claim 26 (currently amended): A thermal barrier coating on a surface of a component, the thermal barrier coating comprising a thermal-insulating material in which is contained clusters of elemental carbon and a carbon-containing ~~elemental carbon and/or a~~ gas that is insoluble in the thermal-insulating material, the ~~elemental carbon and/or~~ insoluble gas and at least some of the clusters being entrapped within pores that have been closed by sintering and are within grains and at and between grain boundaries of the thermal-insulating material, the entrapped clusters and ~~elemental carbon and/or~~ the insoluble gas being present substantially throughout the thermal-insulating material in an amount sufficient to thermally stabilize the microstructure of the thermal-insulating material.

Claim 27 (currently amended): A thermal barrier coating according to claim 26, further comprising clusters of carbides entrapped within some of the pores that were closed by sintering. ~~wherein at least some of the pores contain the elemental carbon.~~

Claim 28 (currently amended): A thermal barrier coating according to claim 26, wherein at least some of the pores closed by sintering entrap sulfur dioxide gas and/or nitrogen gas ~~the insoluble gas.~~

Claim 29 (currently amended): A thermal barrier coating according to claim 26, ~~claim 28,~~ wherein the insoluble gas is at least one gas chosen from the group consisting of carbon monoxide and carbon dioxide. ~~monoxide, carbon dioxide, sulfur dioxide, nitrogen and argon.~~

Claim 30 (currently amended): A thermal barrier coating according to claim 26, wherein ~~at least some of the pores contain the elemental carbon and~~ at least some of the pores closed by sintering entrap at least one gas chosen from the group consisting of sulfur dioxide, nitrogen and argon. ~~the insoluble gas, the insoluble gas being a carbon-containing gas.~~

Claim 31 (original): A thermal barrier coating according to claim 26, wherein the microstructure of the thermal barrier coating comprises columnar grains.

Claim 32 (original): A thermal barrier coating according to claim 26, wherein the thermal-insulating material is predominantly yttria-stabilized zirconia.

Claim 33 (canceled)

Claim 34 (currently amended): A thermal barrier coating on a surface of a superalloy component, the thermal barrier coating comprising:

a bond coat on the component; and

a thermal-insulating material having a columnar microstructure with pores and sub-grain interfaces within, at and between grain boundaries of the microstructure, at least some of the pores throughout the thermal-insulating material being closed by sintering to entrap clusters of ~~entrapping~~ elemental carbon and ~~and/or~~ a carbon-containing gas that inhibit further ~~to resist~~ sintering, grain coarsening and pore redistribution within the thermal-insulating material and thereby thermally stabilize ~~stabilizing~~ the microstructure.

Claim 35 (currently amended): A thermal barrier coating according to claim 34, wherein the thermal-insulating material consists of ~~is~~ yttria-stabilized zirconia.

Claim 36 (currently amended): A thermal barrier coating according to claim 34, wherein at least some of the pores closed by sintering entrap clusters of carbides. ~~the carbon-containing gas.~~

Claim 37 (currently amended): A thermal barrier coating according to claim 36, wherein at least some of the pores closed by sintering entrap carbon dioxide or ~~the entrapped carbon-containing gas is~~ carbon monoxide.

Claim 38 (currently amended): A thermal barrier coating according to claim 34, wherein at least some of the pores closed by sintering entrap sulfur dioxide gas or nitrogen gas. ~~the thermal barrier coating has an open porosity level of at least 25 volume percent.~~

Claims 39-40 (canceled)